FIG. 1

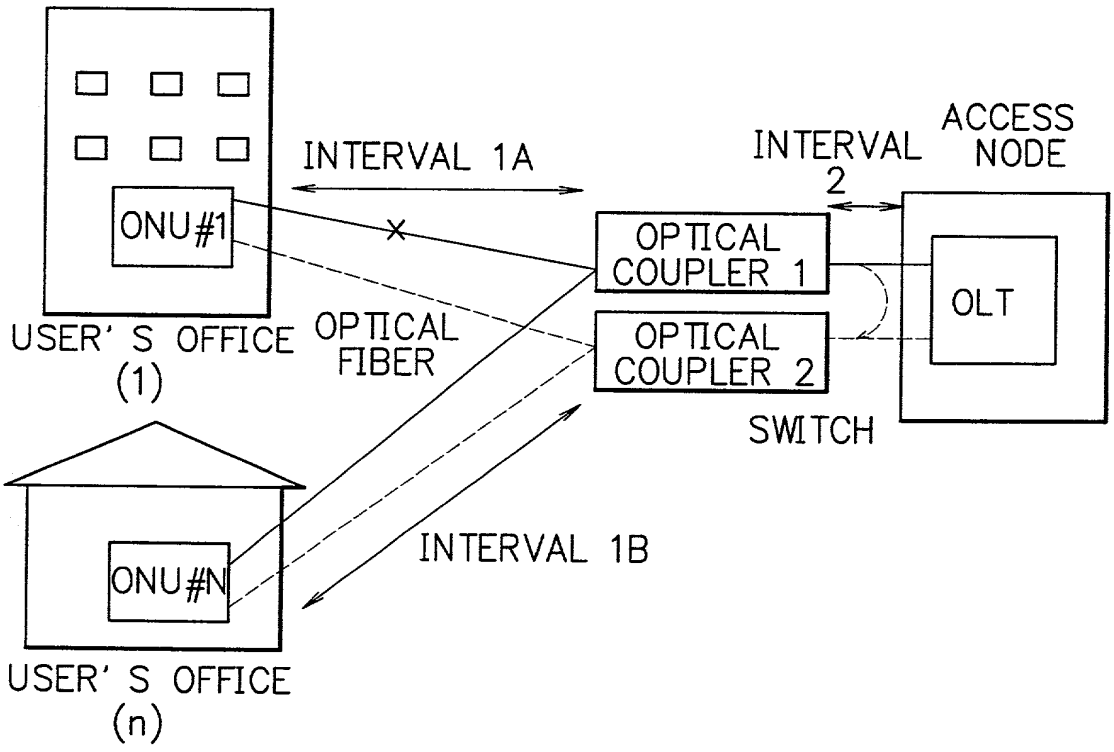
INTERVAL 1A
INTERVAL 2
ACCESS NODE
ONU#1
OPTICAL COUPLER 1
OLT
USER' S OFFICE (1)
OPTICAL FIBER
OPTICAL COUPLER 2
SWITCH
INTERVAL 1B
ONU#N
USER' S OFFICE (n)

FIG. 2

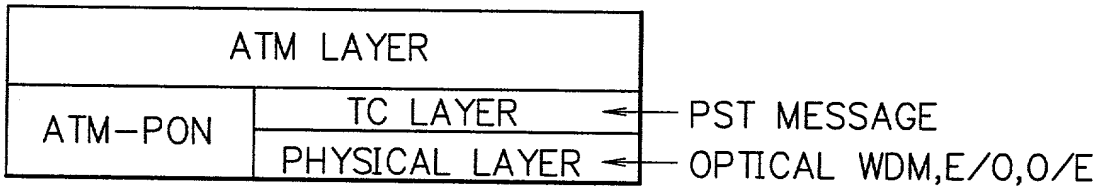
ATM LAYER
ATM-PON
TC LAYER
PHYSICAL LAYER
PST MESSAGE
OPTICAL WDM,E/O,O/E

FIG. 3A

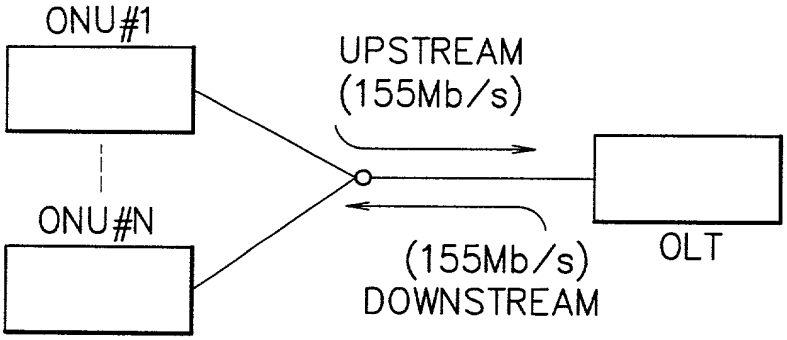
ONU#1
ONU#N
UPSTREAM
(155Mb/s)
(155Mb/s)
DOWNSTREAM
OLT

FIG. 3B

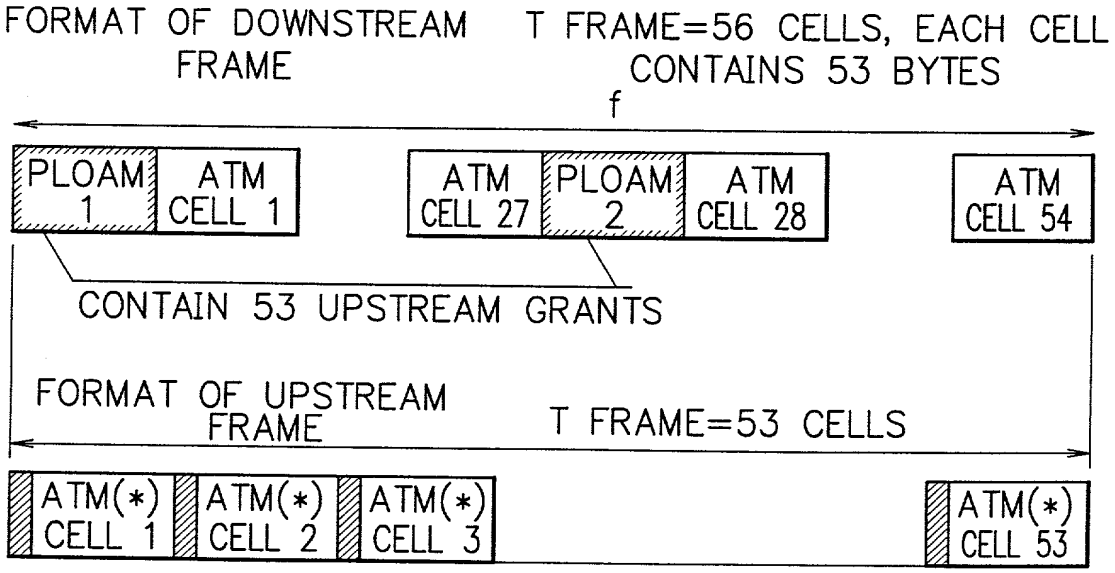
FORMAT OF DOWNSTREAM FRAME
T FRAME=56 CELLS, EACH CELL CONTAINS 53 BYTES
f
PLOAM 1
ATM CELL 1
ATM CELL 27
PLOAM 2
ATM CELL 28
ATM CELL 54
CONTAIN 53 UPSTREAM GRANTS
FORMAT OF UPSTREAM FRAME
T FRAME=53 CELLS
ATM(*) CELL 1
ATM(*) CELL 2
ATM(*) CELL 3
ATM(*) CELL 53

FIG. 4

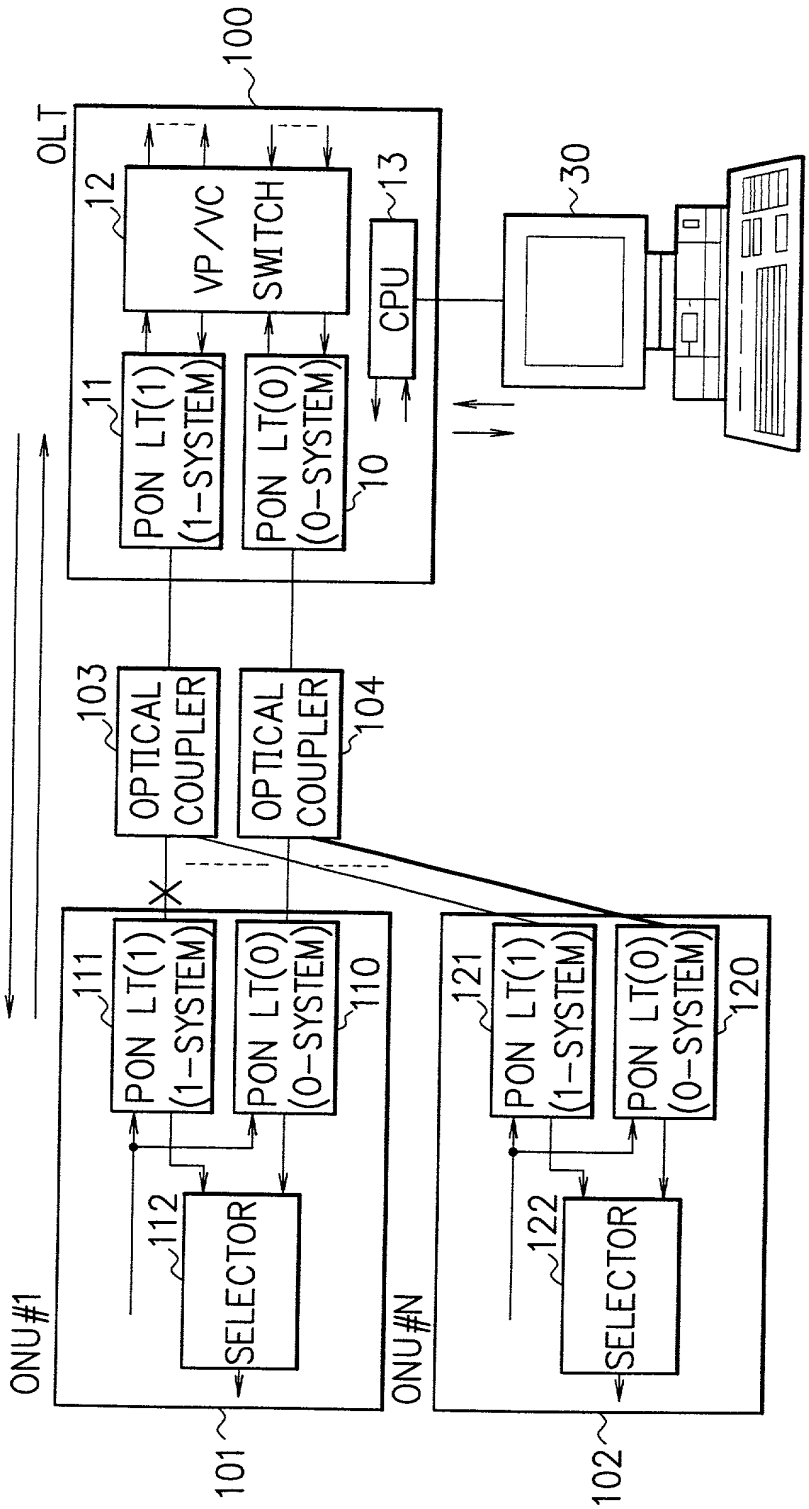
100
OLT
12
VP/VC SWITCH
13
CPU
30
11
PON LT(1) (1-SYSTEM)
PON LT(0) (0-SYSTEM)
10
PST MESSAGE
103
OPTICAL COUPLER
104
OPTICAL COUPLER
111
PON LT(1) (1-SYSTEM)
PON LT(0) (0-SYSTEM)
110
112
SELECTOR
ONU#1
101
121
PON LT(1) (1-SYSTEM)
PON LT(0) (0-SYSTEM)
120
122
SELECTOR
ONU#N
102

FIG. 5A

FIG. 5C

FIG. 5B

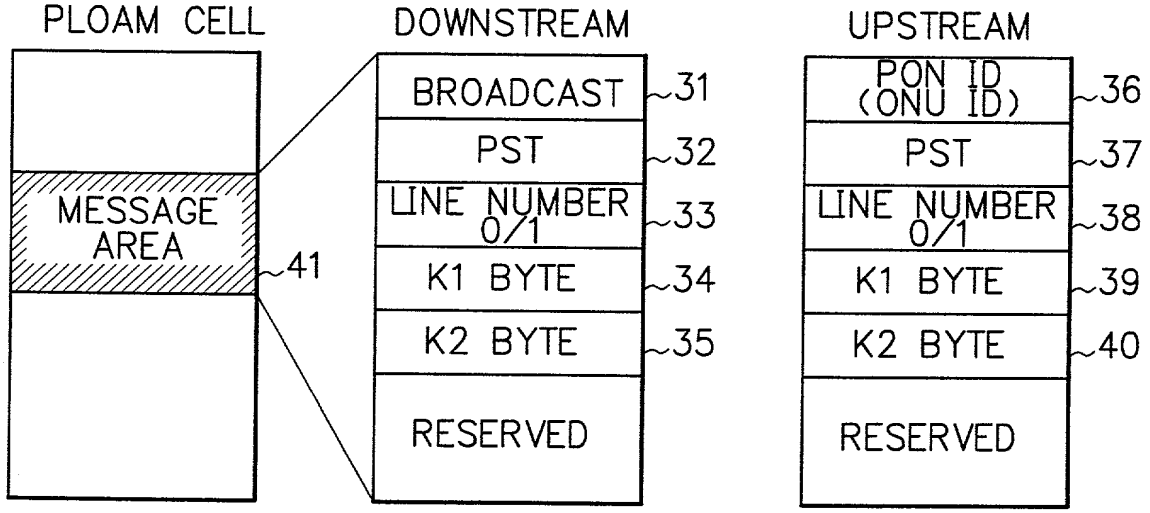

FIG. 6A

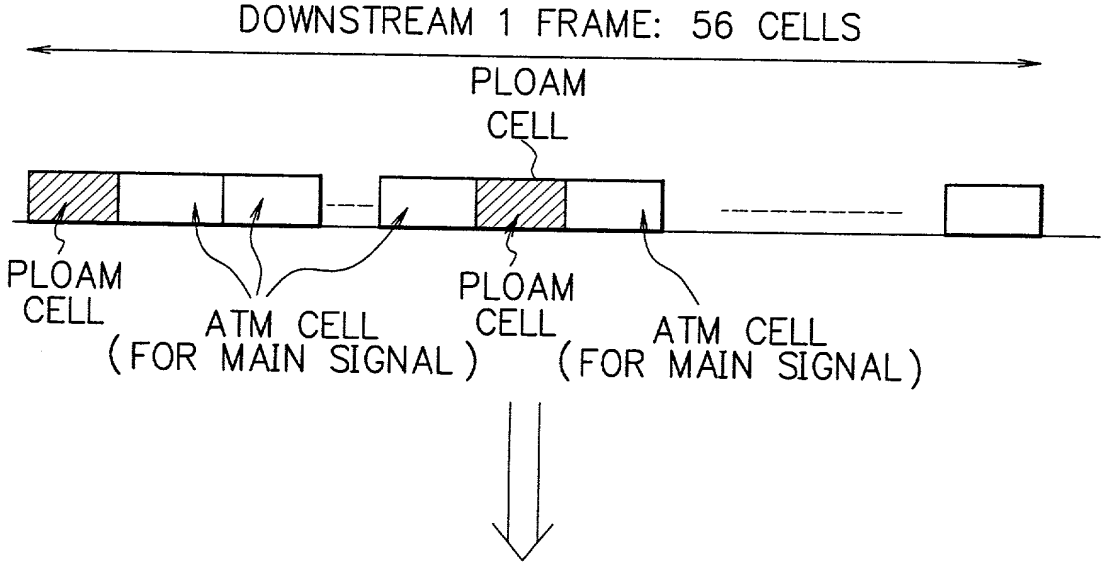

FIG. 6B

PLOAM CELL 1	1	2	3	-------	27
PLOAM CELL 2	28	29	30	-------	56

OAM FUNCTION MAIN SIGNAL AREA

FIG. 7

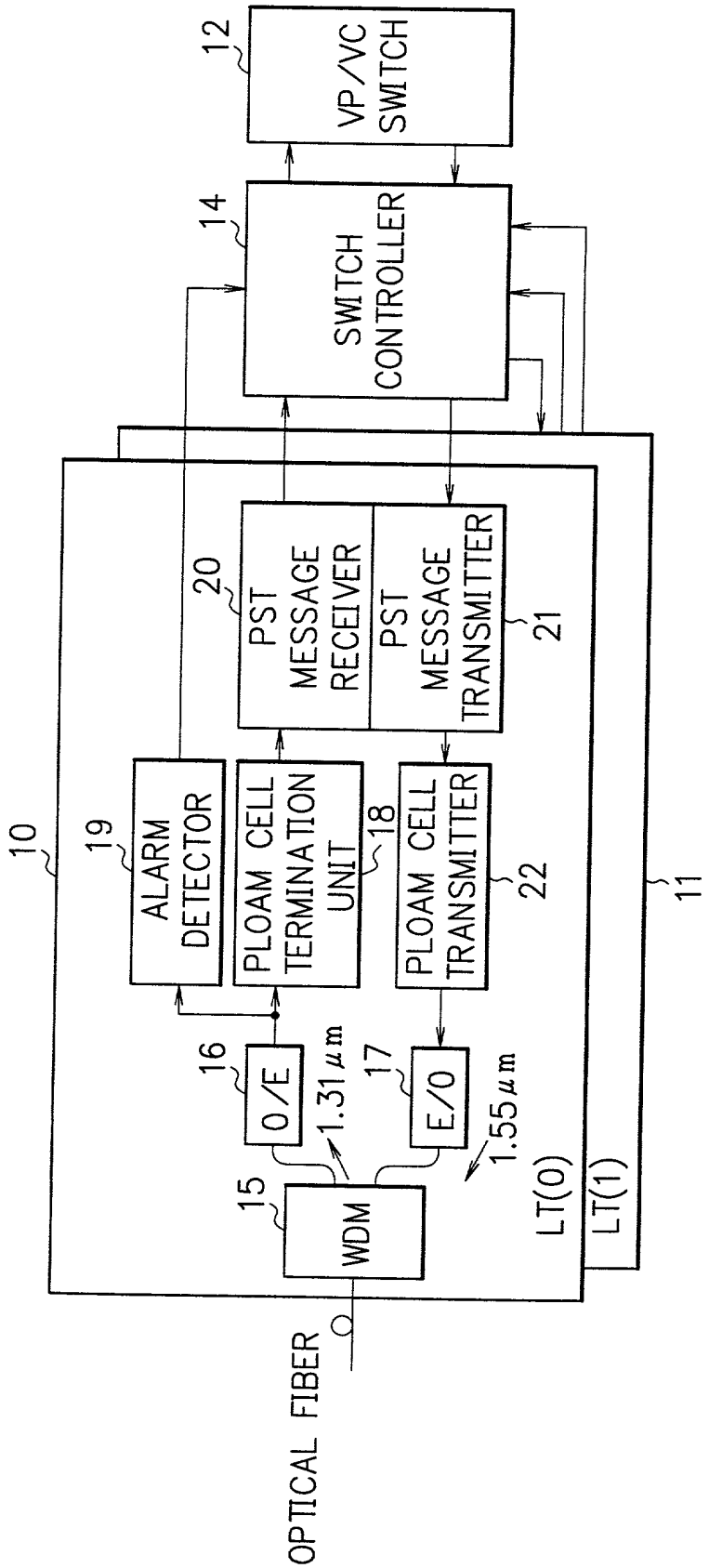
12
VP/VC SWITCH
14
SWITCH CONTROLLER
20
PST MESSAGE RECEIVER
PST MESSAGE TRANSMITTER
21
10
19
ALARM DETECTOR
PLOAM CELL TERMINATION UNIT
18
PLOAM CELL TRANSMITTER
22
11
16
O/E
1.31 μm
17
E/O
1.55 μm
15
WDM
LT(0)
LT(1)
OPTICAL FIBER

FIG. 8

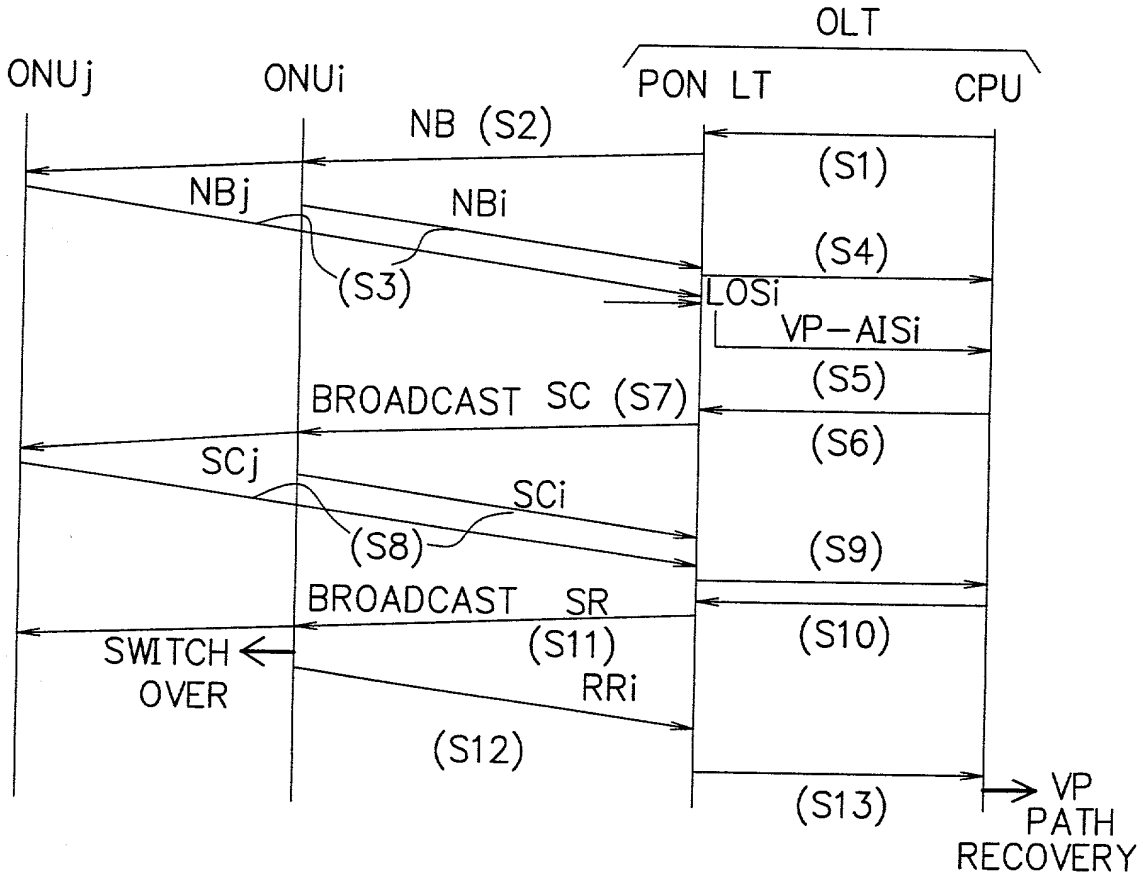
OLT
ONUj
ONUi
PON LT
CPU
NB (S2)
(S1)
NBj
NBi
(S4)
(S3)
LOSi
VP-AISi
(S5)
BROADCAST SC (S7)
(S6)
SCj
SCi
(S8)
(S9)
BROADCAST SR
(S10)
SWITCH OVER
(S11)
RRi
(S12)
(S13)
VP PATH RECOVERY

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FIG. 9A

OPERATION / EVENT	NON-BRIDGE	BRIDGE	FAULT IN BACKUP SYSTEM NON-BRIDGE	FAULT IN BOTH SYSTEMS NON-BRIDGE
PRIMARY: 0-SYSTEM	SCi(0)	V	NONE	V	NONE
BACKUP: 1-SYSTEM	SCi(1)	V	V	NONE	NONE

FIG. 9B

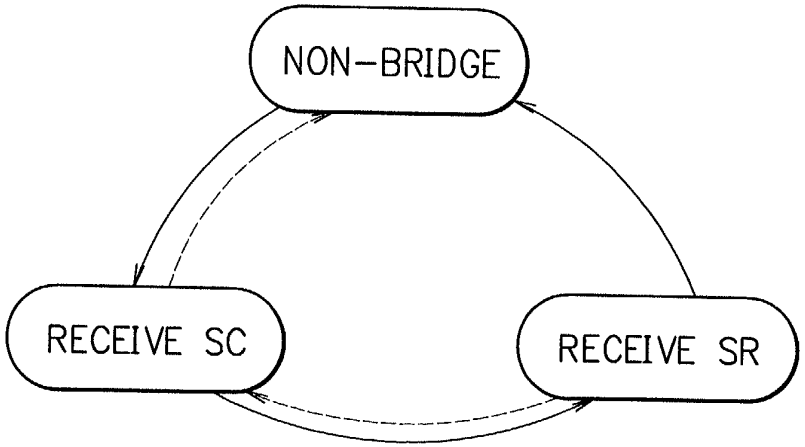


FIG. 10

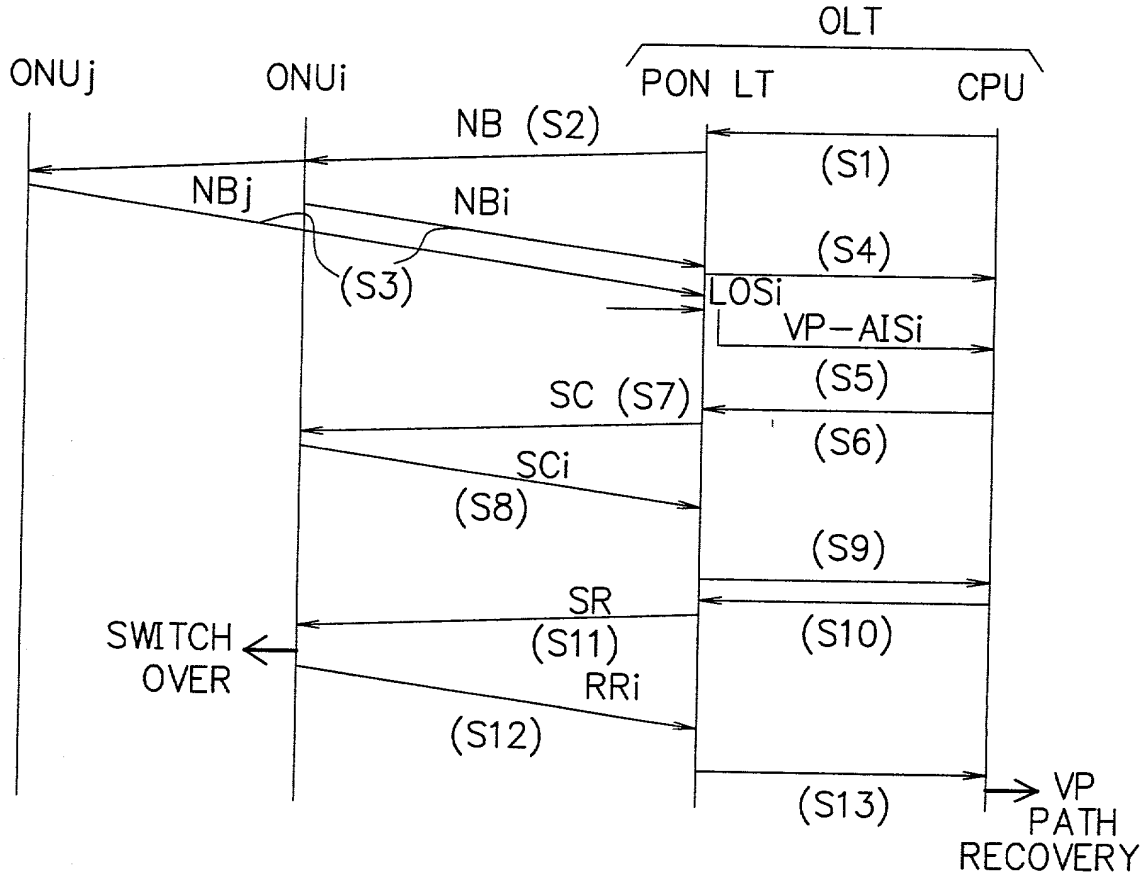

OLT
ONUj
ONUi
PON LT
CPU
NB (S2)
(S1)
NBj
NBi
(S4)
(S3)
LOSi
VP-AISi
(S5)
SC (S7)
(S6)
SCi
(S8)
(S9)
SR
(S10)
SWITCH OVER
(S11)
RRi
(S12)
(S13)
VP PATH RECOVERY

FIG. 11

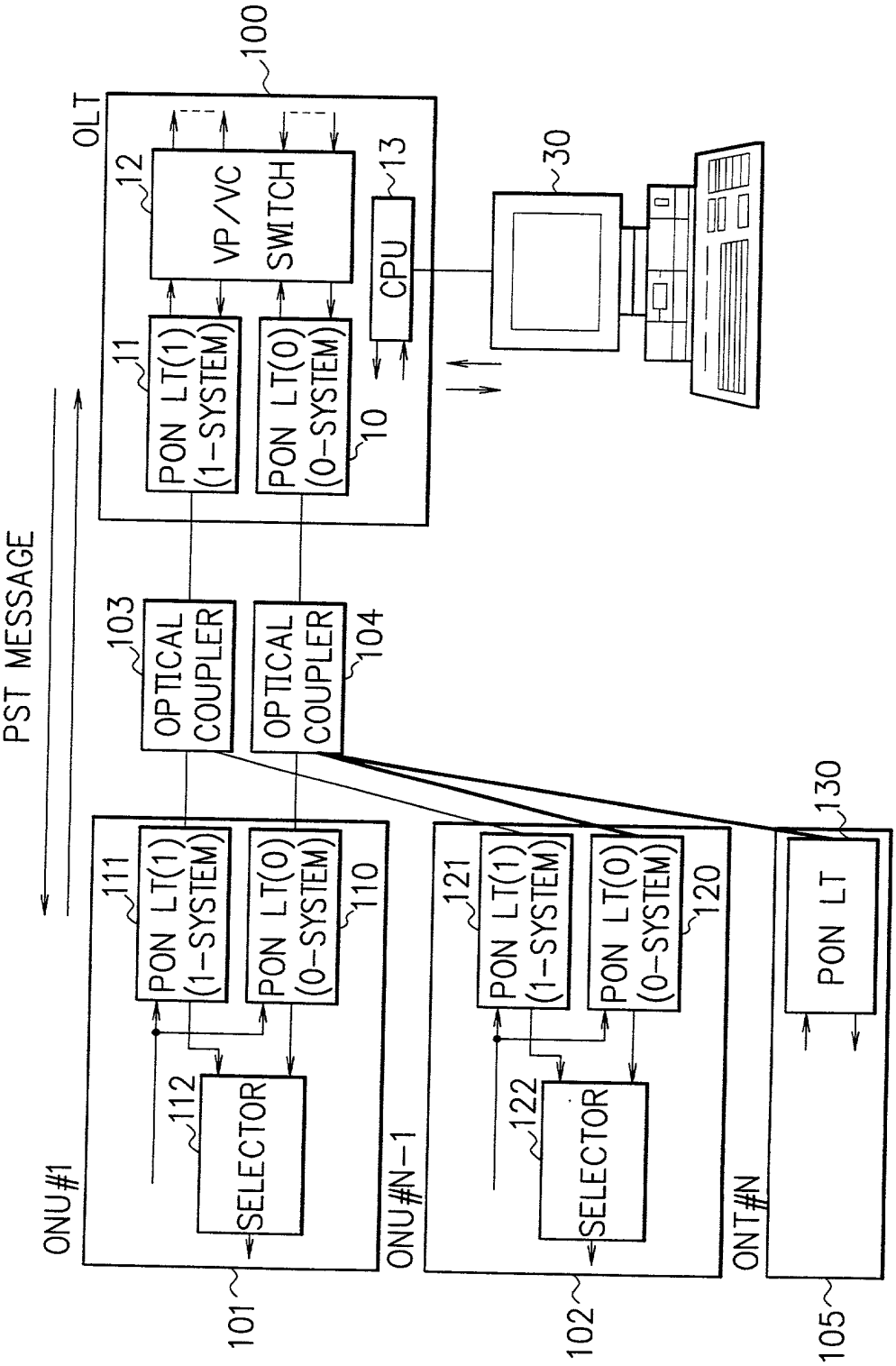

OLT
100
VP/VC SWITCH
12
CPU
13
30
PON LT(1) (1-SYSTEM)
11
PON LT(0) (0-SYSTEM)
10
PST MESSAGE
OPTICAL COUPLER
103
OPTICAL COUPLER
104
PON LT(1) (1-SYSTEM)
111
PON LT(0) (0-SYSTEM)
110
SELECTOR
112
ONU#1
101
PON LT(1) (1-SYSTEM)
121
PON LT(0) (0-SYSTEM)
120
SELECTOR
122
ONU#N-1
102
PON LT
130
ONT#N
105

FIG. 12

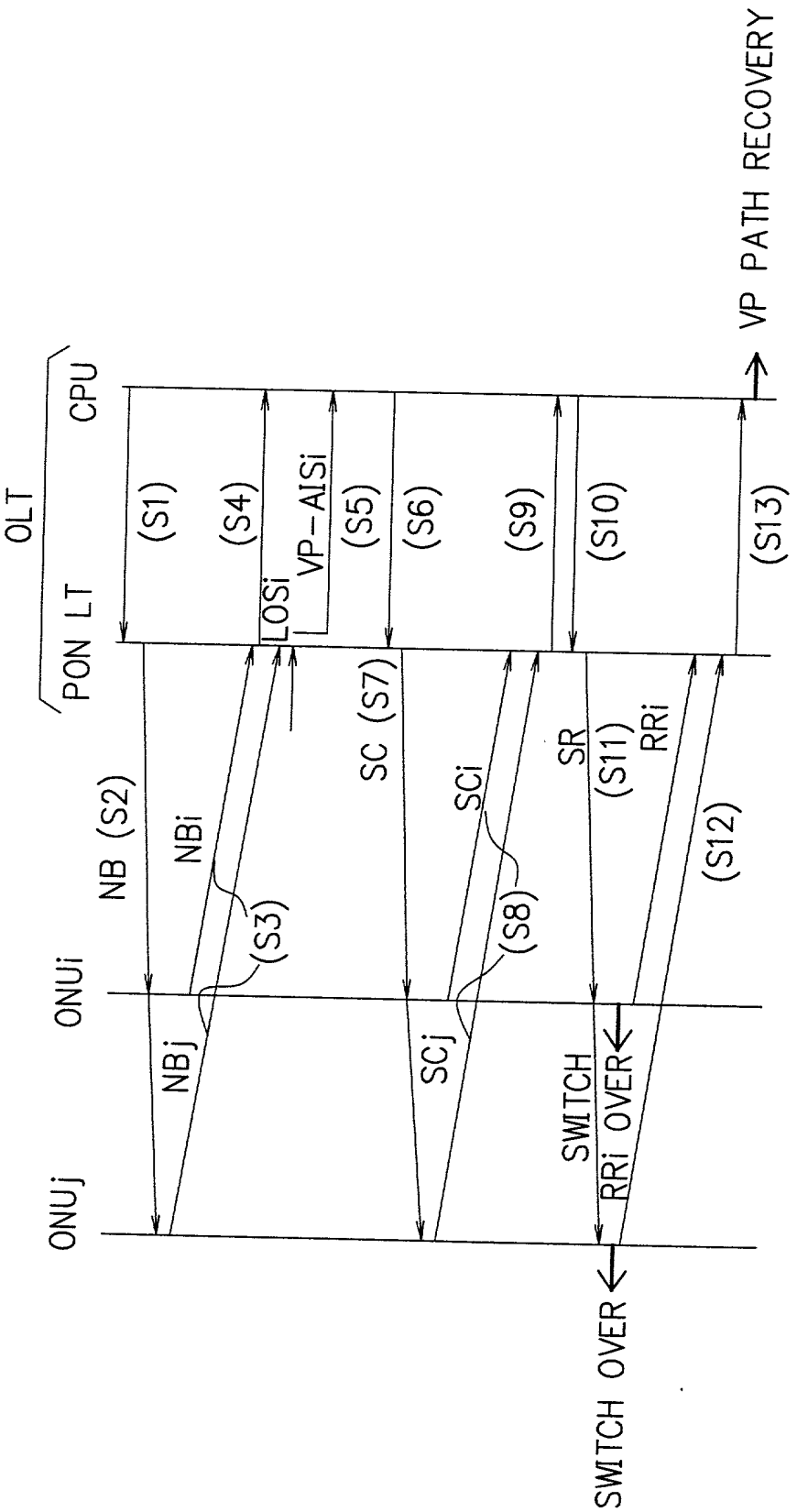
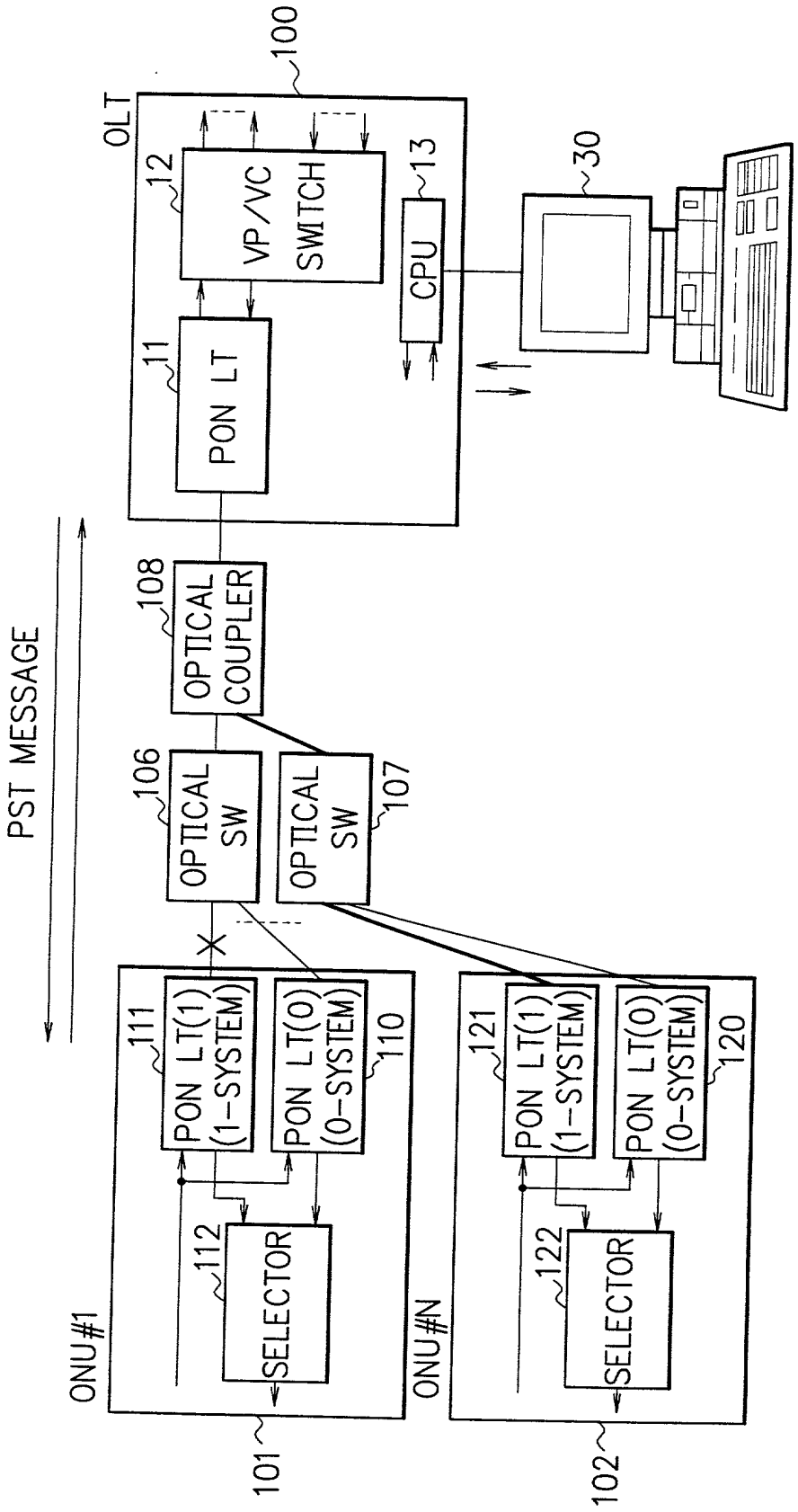

OLT
CPU
PON LT
ONUi
ONUj
VP PATH RECOVERY
(S1)
(S4)
LOSi
VP-AISi
(S5)
(S6)
(S9)
(S10)
(S13)
NB (S2)
NBi
(S3)
SC (S7)
SCi
(S8)
SR
(S11)
RRi
(S12)
NBj
SCj
SWITCH
RRi OVER
SWITCH OVER

FIG. 13


100
OLT
12
VP/VC SWITCH
13
CPU
30
11
PON LT
108
OPTICAL COUPLER
PST MESSAGE
106
OPTICAL SW
107
OPTICAL SW
111
PON LT(1) (1-SYSTEM)
110
PON LT(0) (0-SYSTEM)
112
SELECTOR
ONU#1
101
121
PON LT(1) (1-SYSTEM)
120
PON LT(0) (0-SYSTEM)
122
SELECTOR
ONU#N
102